Madangia inflata (Asclepiadaceae: Marsdenieae), a new genus and species from Papua New Guinea

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Summary

Forster, Paul I., Liddle, David J., Liddle, Iris M. (1997). *Madangia inflata* (Asclepiadaceae: Marsdenieae), a new genus and species from Papua New Guinea. Austrobaileya 5(1): 53–57. The new genus *Madangia* is described with the sole species *M. inflata* P.I.Forst., D.J.Liddle & I.M.Liddle. *M. inflata* is thus far known only from the Madang Province of Papua New Guinea. The genus is closely allied to *Hoya* R.Br. to which it is compared.

Keywords: Asclepiadaceae, Marsdenieae, *Hoya*, *Madangia* - Papua New Guinea; *Madangia inflata.*

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Introduction

The authors are working towards a revision of the genera *Hoya* R.Br. and *Dischidia* R.Br. (both Asclepiadaceae: Marsdenieae) as they occur in Australia and Papuasia. In 1992 the first two authors collected numerous live material of *Hoya* in north-east Papua New Guinea, particularly in Madang Province. One of the plants, collected at the time without flowers and with the vegetative appearance of a species of *Hoya*, has now subsequently flowered in cultivation and is not referable to that genus. This plant represents not only an undescribed species, but an undescribed genus, which although allied to *Hoya,* differs in numerous ways from all taxa included in that genus. This species is described as *Madangia inflata* in the present paper and its affinities discussed. There appear to be no previous herbarium collections of this plant that has rather remarkable, showy, white, globose flowers and is of considerable horticultural merit.

Madangia P.I.Forst., D.J.Liddle et I.M.Liddle **genus novum**. Genus singulare in Asclepiadaceis: Marsdenieis per corollam globosam et formam loborum coronae staminalis. Lobi coronae staminalis membranei et sibi contigui (autem non connati) secus longitudinem paene omnino praeter apices supernos lanceolatos prope apicem styli et margines infernos columna staminali multo longiores. Margo infernus quuisque columnae staminalis valde recurvus in extremitate necnon segmenta membranacea involutiones corollae interposita format.

A genus unique within the Asclepiadaceae: Marsdenieae by virtue of the globose corolla, and the form of the staminal corona lobes. The staminal corona lobes are membranous and contiguous (but not fused) to each other for almost their entire length, apart from the upper lanceolate apices near the style head and the lower edges that are much longer than the staminal column. The lower edge of each staminal corona lobe is strongly recurved at the end and forms a membranous frill positioned between involutions of the corolla wall.

Type species: *Madangia inflata* P.I.Forst., D.J.Liddle & I.M.Liddle

Epiphytic twiner; latex white. Roots fibrous. Leaves petiolate; lamina fleshy, hairy; with colleters. Inflorescence deciduous, usually single at a node, umbelliform to racemiform, positively geotropic. Flowers pedicellate. Sepals 5. Corolla globose, fleshy-membranous;

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tube much inflated, of 5 completely fused petals; lobes free at tips, valvate. Annular and corolline coronas absent; staminal corona of 5 membranous lobes that are contiguous with but not fused to each other, each lobe attached to the back of each anther that make up the fused staminal column, lower edge of lobe strongly flanged away from central part of flower and strongly recurved with a somewhat frilled margin that is positioned between involutions of the corolla wall; interstaminal corona absent. Stamens connate into gynostegium (staminal column), not markedly capitate. Anthers 2-locular with terminal appendage; pollen in linear tetrads; pollinaria with 2 erect, oblong pollinia with a pellucid germinating mouth on outer margin; corpsculum oblong-ovate; caudicles not winged, not geniculate. Style-head rounded. Follicles and seeds not seen.

A monotypic genus, endemic to Papua New Guinea.

Etymology: The generic name is formed from the geographical region of Madang Province in north-east Papua New Guinea.

Madangia inflata P.I.Forst., D.J.Liddle et I.M.Liddle **sp. nov.** Volubilis lenta; indumento trichomatum incoloratum simplicium multicellularum. Caules usque ad metra pluria longi ad interque internodos radicantes, trichomatibus sparsis; internodia usque ad 200 mm longa et 2 mm diametro, lenticellata demum. Petioli cylindrici, 8–12 mm longi, 1.5–3.5 mm diametro, leviter sulcati supra, trichomatibus sparsis antroris. Colletri rotundati 1 vel 2 basi laminae. Lamina folii elliptica usque ad elliptico-ovata, succulenta, usque ad 120 mm longa et 60 mm lata, apice acuta usque ad breve acuminata, basi cordata lobis superpositis; venatio ex venis 6 vel 7 lateralibus arenatis et et venis interlateralibus reticulatis indistinctis constans; pagina supera viridis venatione ± obscura trichomatibus dispersis; pagina infera pallide viridis venatione indistincta trichomatibus dispersus usque ad sparsis. Pedunculi florentes 8–22 mm longi, 1.5–2 mm diametro, trichomatibus dispersis floribus usque ad 9 ornati; bractea ovato-truncata, 0.4–0.5 mm longa, 0.5–0.8 mm lata, sparse ciliata. Flores 12-14 mm longi, 17–18 mm diametro; pedicelli 32-45 mm longi, 1.4-1.5 mm diametro, glabri. Sepala triangularia, c. 1 mm longa et 2 mm lata. Corolla 12–13 mm longa, 17–18 mm diametro, alba; tubus 12–14 mm longa, 17–18 mm diametro, glaber, basi sub sepalis protrusa eaque occulta, apice in centro depresso; lobi 5–6 mm longi, 6–7 mm lati, apice leviter recurvi, intra breve papillati. Corona staminalis c. 8 mm longa et 10 mm diametro; apices loborum apicem styli aequantes. Columna staminalis c. 4 mm longa et 3 mm diametro; antherae appendices lanceolatae c. 1 mm longae et 0.7 mm latae; fissura alaris 0.8–1 mm longa sub antheris non prolongata. Apex styli c. 1 mm longus et 1 mm diametro. Pollinaria c. 0.96 mm longa et 0.77 mm lata; pollinia 0.77–0.78 longa, 0.29–0.31 mm lata; corpusculum 0.38–0.43 mm longum, 0.21–0.24 mm latum; caudiculae 0.11–0.14 mm longa, 0.5–0.9 mm lata. latiores in extremo corpusculari. **Typus:** Cultivated at Emerald Creek, Mareeba (from plant collected Papua New Guinea. MADANG PROVINCE: Headwaters Dom River, 4°58'S, 145° 45'E), 26 Nov 1995, *I.M.Liddle* IML1076 (holo: BRI [1 sheet + spirit]).

Wiry twiner; indumentum of uncoloured simple multicellular trichomes. Stems to several metres long, rooting at and between nodes, with sparse trichomes; internodes up to 200 mm long and 2 mm diameter, lenticillate with age. Leaf petioles cylindrical, 8–12 mm long, 1.5–3.5 mm diameter, faintly grooved along top, with sparse antrorse trichomes; colleters rounded, 1 or 2 at lamina base. Leaf lamina elliptic to elliptic-ovate, fleshy, up to 120 mm long and 60 mm wide; tip acute to shortly acuminate; base cordate with the lobes overlapping; venation of 6 or 7 looping lateral veins and indistinct reticulate interlateral veins; upper surface green, venation ± obscure, with scattered trichomes; lower surface pale green, venation indistinct,

with scattered to sparse trichomes. Flowering peduncles 8–22 mm long, 1.5–2 mm diameter, with scattered trichomes, with up to 9 flowers; bracts ovate-truncate, 0.4–0.5 mm long, 0.5–0.8 mm wide, sparsely ciliate. Flowers 12–14 mm long, 17–18 mm diameter; pedicels 32–45 mm long, 1.4–1.5 mm diameter, glabrous. Sepals triangular, c. 1 mm long and 2 mm wide, glabrous. Corolla 12–13 mm long, 17–18 mm diameter, white; tube 12–14 mm long, 17–18 mm diameter, glabrous, base protuding down below sepals and obscuring them, top depressed in centre; lobes 5–6 mm long, 6–7 mm wide, slightly recurved at top, shortly papillate inside. Staminal corona c. 8 mm long and 10 mm diameter; lobe tips level with style-head. Staminal column c. 4 mm long and 3 mm diameter; anther appendages lanceolate, c. 1 mm long and 0.7 mm wide; alar fissure 0.8–1 mm long, not continuing down below anthers. Style-head c. 1 mm long and 1 mm diameter. Pollinaria c. 0.96 mm long and 0.77 mm wide; pollinia 0.77–0.78 mm long, 0.29–0.31 mm wide; corpusculum 0.38–0.43 mm long, 0.21–0.24 mm wide; caudicles 0.11–0.14 mm long, 0.5–0.9 mm wide, wider at corpusculum end. Fig. 1.

Additional specimens examined: Known only from the type collection and live plants in cultivation.

Distribution and habitat: *Madangia inflata* is known only from the single type collection. Plants grow as twig epiphytes in the canopy of lowland complex mesophyll vineforest on volcanic soil. *Hoya kenejiana* Schltr. and miscellaneous ferns and orchids grow in association. Plants recorded in the surrounding forest include *Tabernaemontana aurantiaca* Gaud., *T. pandacaqui* Lam., *Aglaia* sp., *Graptophyllum pictum* (L.) Griff., *Pittosporum* sp., *Popowia* sp., *Casearia* sp., *Rinorea horneri* (Korth.) O.Kuntze, *Maniltoa psilogyne* Harms and *Polyalthia* sp.

Notes: *Madangia inflata* is unique in the Marsdenieae for its globose corolla and the form of the staminal corona. Globose corollas are rare in the Marsdenieae, the only regional example being the Australian *Gunnessia pepo* P.I.Forst. (Forster 1990). *Madangia inflata* does not appear closely allied to *Gunnessia pepo* which has a totally dissimilar staminal corona and pollinaria. Globose corollas are more common, but still rare, in the Stapelieae (sensu Bruyns & Forster 1991), with convergently similar examples to *Madangia* being found in *Echidnopsis malum* (Lavranos) Bruyns (Bruyns 1988) and *Stapeliopsis neronis* Pillans (Bruyns 1981), both stem succulents from Africa. Unlike *Echidnopsis malum*, *Gunnessia pepo* and *Stapeliopsis neronis*, the staminal column of *Madangia inflata* is not further enclosed by a tubular staminal corona within the enclosing corolla.

Madangia inflata is undoubtedly most closely allied to *Hoya* as it has a similar habit, and apart from the globose corolla and staminal corona, has a similar floral morphology to many species especially those in Papuasia. Globose corollas are extremely uncommon in *Hoya* with the only known example being *H. heuschkeliana* Kloppenburg from the Philippines. The corolla lobes in *H. heuschkeliana* are not as completely fused as in *M. inflata* with an obvious suture along the margins of each lobe, nor are they anywhere as large. Apart from its globose corolla, *H. heuschkeliana* has a staminal corona typical of *Hoya*.

The recently described *H. telosmoides* Omlor from Sabah is also worth mentioning here. This species has a corolla with a markedly inflated tube that has a constricted mouth and narrow lobes (Omlor 1996). These characters are not found in other species of *Hoya*, but *H. telosmoides* has a similar staminal corona to other species of that genus and Omlor (1996) concluded that it would be best placed there until such time as a monograph of *Hoya* could be undertaken and the status of the infrageneric classification reviewed.

The staminal corona of *M. inflata* differs markedly from that of *Hoya*. In *Hoya* the staminal corona comprises five separate lobes that are attached to the backs of the anthers fused into the staminal column. The lobes are discrete and although well separated in most taxa of *Hoya* may be closely contiguous in some species. The lower edge of each staminal corona lobe in *Hoya* is strongly inrolled along the sides

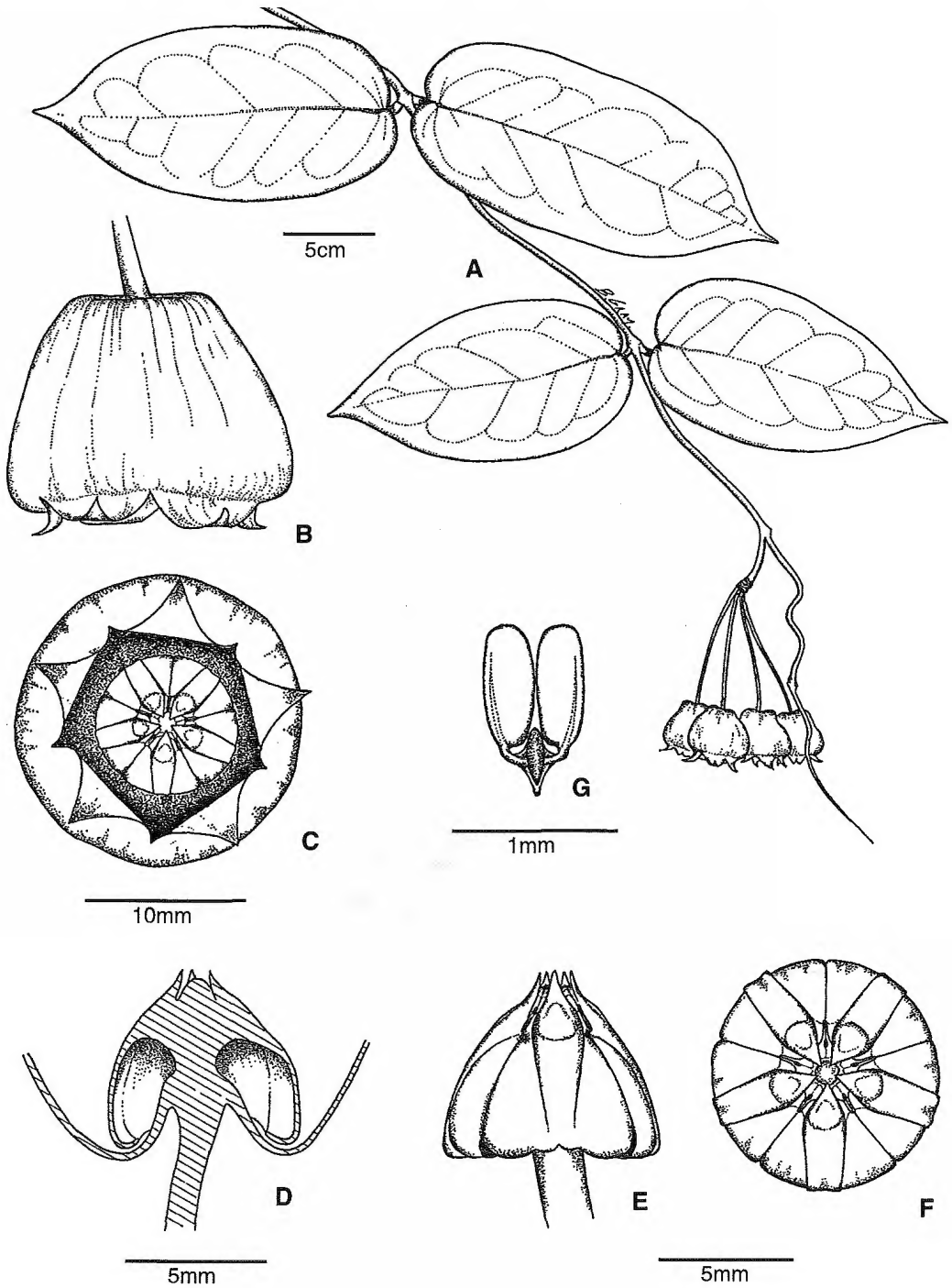

Fig. 1. ***Madangia inflata.*** A. habit of flowering stem × 0.5. B. side view of flower × 3. C. face view of flower × 3. D. vertical cross-section of lower part of corolla tube, staminal corona and staminal column × 3.5. E. side view of staminal corona and staminal column × 3.5. F. face view of staminal corona and staminal column × 3.5. G. pollinarium × 25. All from live and spirit material of D.J.Liddle IML1076. Del. B.Gray.

forming the 'coronal groove' of Rintz (1978). In *Madangia* the five staminal corolla lobes are contiguous to each other for almost their entire length, apart from the upper apex near the style head and the strongly recurved lower edges. The lower edge of each staminal corona lobe in *Madangia* is recurved at the end, although not at the sides, and forms a membranous frill, rather then a fleshy roll, that is positioned between involutions of the corolla wall. As a result no 'coronal groove' is formed. The only *Hoya* that approaches the staminal corona form of *Madangia* is *H. multiflora* Blume, that is sometimes segregated in the genus *Centrostemma* as *C. multiflorum* (Blume) Decne. In *H. multiflora* the staminal corona lobes do not have a marked 'corona groove', although it is still present, and the lower edge of the lobes are sharpely pointed (Rintz 1978). *H. multiflora* is a shrubby plant that never twines, not an uncommon trait in *Hoya*, and has a strongly reflexed rotate corolla. It is feasible that the floral features of a *Hoya* such as *H. multiflora* are plesiomorphic and similar to a putative ancestor to *Madangia*.

The pollinaria of *Madangia inflata* appear similar to those illustrated as group B of Malaysian Hoyas by Rintz (1978), where the caudicles are unwinged and the outer edge of the pollinia have a pellucid germination mouth.

The features of a globose corolla with totally fused corolla lobes, apart from the tips, and contiguous staminal coronal lobes that have a strongly recurved, frilled lower edge are considered derived for *Madangia*. Description of *Madangia* does not lend justification for dismemberment of *Hoya* into segregate groups as has been alluded to on occasion (e.g. Hill 1988). Despite the great morphological variability encompassed within the latter, the species presently recognised within *Hoya* are united by the shared character states of the staminal corona as described above.

Conservation status: The lowland rainforests of Madang Province are being cleared at an alarming rate for saw-logs and woodchips. The type locality for *M. inflata* was a remnant of forest in an almost totally logged (clear-felled) area. Survival of this species in the area of its initial collection is unlikely in the near future.

Etymology: The specific epithet is derived from the Latin *inflatus* (bladdery, thin, membranous and swollen) and alludes to the corolla texture and shape.

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